

Docket No.: LK-0017

PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF APPEALS AND INTERFERENCE**

In re Application of

Confirmation No.: 3547

Youngbok SON; Jinhyouk SHIN; Sang-Hun BAE and Sung-Hwa LEE

Group Art Unit: 3723

Serial No.: 10/579,735

Examiner: Scruggs, Robert J.

Filed: May 18, 2006

Customer No.: 34610

For: VACUUM CLEANER

APPEAL BRIEF

U.S. Patent and Trademark Office
Customer Window, Mail Stop Appeal Brief-Patents
Randolph Building
401 Dulany Street
Alexandria, Virginia 223134

Sir:

This appeal is taken from the rejection of claims as set forth in the Office Action of April 9, 2010 (hereinafter the Office Action). In accordance with 37 C.F.R. §41.37, Applicants address the following items.

REAL PARTY IN INTEREST

The real party in interest is the assignee, LG Electronics Inc. The assignment document is recorded at Reel 017904 and Frame 0239.

RELATED APPEALS AND INTERFERENCES

There are no related appeals and/or interferences.

STATUS OF THE CLAIMS

This is an appeal from the final rejection dated April 9, 2010 of claims 1-4 and 6-12. Claim 5 was cancelled in an Amendment filed on August 28, 2009. No other claims are pending.

STATUS OF AMENDMENTS

All Amendments filed in this application have been entered. A copy of appealed claims 1-4 and 6-12 appears in the attached Claims Appendix.

SUMMARY OF THE CLAIMED SUBJECT MATTER

As stated in 37 C.F.R. §41.37(c)(v), Applicants are providing the following explanation of independent claim 1, as well as dependent claims 2-4 and 6-12, involved in this appeal. This explanation refers to the specification and drawings. The following is merely an exemplary summary and is not intended to be a discussion of the full and entire scope of the claims. Other interpretations, configurations and embodiments are also within the scope of the pending claims.

Independent Claim 1

Independent claim 1 recites a vacuum cleaner (Fig. 2), comprising a suction head (element 60/Figs. 2 and 6) installed at a front end of a suction path, wherein a vacuum pressure generated by a suction motor draws substances in through a suction hole (element 62h/ Figs. 3, 4 and 7; 162h/ Fig. 5) formed in a bottom surface of an outer casing (element 62/Figs 2-7) of the suction head (element 60/Figs. 2 and 6) and into the suction path, a brush (element 64/Figs 3-5 and 7) rotatably installed in the suction hole (element 62h/ Figs. 3, 4 and 7; 162h/ Fig. 5) of the suction head (element 60/Figs. 2 and 6), and configured to rotatably contact a surface to be cleaned and at least one hair tunnel (elements 66, 68/Figs. 3, 4 and 7/ 166/ Fig. 5) formed in the suction head (element 60/Figs. 2 and 6), wherein an inlet (elements 66h, 68h/Figs. 4 and 7/ 166h/ Fig. 5) into the at least one hair tunnel (elements 66, 68/Figs. 3, 4 and 7/ 166/ Fig. 5) and an inlet into the suction hole (element 62h/ Figs. 3, 4 and 7; 162h/ Fig. 5) are spaced apart from each other on the bottom surface of the outer casing (element 62/Figs 2-7) with a corresponding portion of the bottom surface of the outer casing (element 62/Figs 2-7) positioned therebetween such that the rush (element 64/Figs 3-5 and 7) installed in the suction hole (element 62h/ Figs. 3, 4 and 7; 162h/ Fig. 5) does not interfere with the at least one hair tunnel (elements 66, 68/Figs. 3, 4 and 7/ 166/ Fig. 5), wherein the at least one hair tunnel (elements 66, 68/Figs. 3, 4 and 7/ 166/ Fig. 5) draws thin and long substances from the surface (page 7/line 9 – page 8/line 17 and page 9/lines 2-5 of the specification).

Dependent Claim 2

Dependent claim 2 depends from independent claim 1. Dependent claim 2 recites that at least one hair tunnel (elements 66, 68/Figs. 3, 4 and 7/ 166/Fig. 5) is linked to the front end of the suction path by a first path that is isolated from a second path that links the suction hole (element 62h/ Figs. 3, 4 and 7; 162h/Fig. 5) to the front end of the suction path (page 8/line 3 – page 9/line 1 of the specification).

Dependent Claim 3

Dependent claim 3 depends from dependent claim 2, which depends from independent claim 1. Dependent claim 3 recites that the inlet of the at least one hair tunnel (elements 66, 68/Figs. 3, 4 and 7/ 166/Fig. 5) surrounds the suction hole (element 62h/ Figs. 3, 4 and 7; 162h/Fig. 5), with the corresponding portion of the outer casing (element 62/Figs 2-7) of the suction head (element 60/Figs. 2-7) positioned therebetween (page 8/lines 3-17 of the specification).

Dependent Claim 4

Dependent claim 4 depends from dependent claim 2, which depends from independent claim 1. Dependent claim 4 recites that the inlet of the at least one hair tunnel (elements 66, 68/Figs. 3, 4 and 7/ 166/Fig. 5) is positioned at one of a front portion or a rear portion of the suction hole (element 62h/ Figs. 3, 4 and 7; 162h/Fig. 5) in a direction corresponding to a

movement direction of the suction head (element 60/Figs. 2-7) (page 9/line 20 – page 10/line 12 of the specification).

Dependent Claim 6

Dependent claim 6 depends from dependent claim 12, which depends from independent claim 1. Dependent claim 6 recites that at least one sweeper (elements 66a, 66b, 68a, 68b/Figs. 6-8) comprises a first sweeper (elements 66a, 66b/Figs. 6-8) that protrudes downward from the bottom surface of the outer casing (element 62/Figs. 2-7) along a first peripheral edge of the inlet (element 66h/Figs. 4 and 7) of the at least one hair tunnel (element 66/Figs. 4 and 7), and a second sweeper (element 68a, 68b/Figs. 6-8) that protrudes downward from the bottom surface of the outer casing (element 62/Figs. 2-7) along a second peripheral edge of the inlet (element 68h/Figs. 4 and 7) of the at least one hair tunnel (element 68/Figs. 4 and 7) opposite the first peripheral edge, wherein the second peripheral edge is closer to the suction hole (element 62h/Figs. 3, 4 and 7; 162h/Fig. 5) than the first peripheral edge is (page 9/line 20 – page 10/line 12 of the specification).

Dependent Claim 7

Dependent claim 7 depends from dependent claim 6, which depends from dependent claim 12, which depends from independent claim 1. Dependent claim 7 recites that the second sweeper (element 68a, 68b/Figs. 6-8) is formed in a group bristle shape with a predetermined

width (Fig. 8) (page 10/lines 13-16 of the specification).

Dependent Claim 8

Dependent claim 8 depends from dependent claim 6, which depends from dependent claim 12, which depends from independent claim 1. Dependent claim 8 recites that the first and second sweepers (elements 66a, 66b, 68a, 68b/Fig. 8) are formed in a comb-tooth shape (page 10/lines 13-16 of the specification).

Dependent Claim 9

Dependent claim 9 depends from dependent claim 8, which depends from dependent claim 6, which depends from dependent claim 12, which depends from independent claim 1. Dependent claim 9 recites that an interval (element a2/Fig. 8B) between adjacent comb teeth of the second sweeper (elements 68a, 68b/Figs. 6-8) is less than an interval (element a1/Fig. 8A) between adjacent comb teeth of the first sweeper (elements 66a, 66b/Figs. 6-8) (page 10/lines 17-19 of the specification).

Dependent Claim 10

Dependent claim 10 depends from dependent claim 9, which depends from dependent claim 8, which depends from dependent claim 6, which depends from dependent claim 12, which depends from independent claim 1. Dependent claim 10 recites that the comb teeth of

the first sweeper (elements 66a, 66b/Figs. 6-8) are longer than comb teeth of the second sweeper (elements 68a, 68b/Figs. 6-8) (page 11/lines 7-9 of the specification).

Dependent Claim 11

Dependent claim 11 depends from dependent claim 10, which depends from dependent claim 9, which depends from dependent claim 8, which depends from dependent claim 6, which depends from dependent claim 12, which depends from independent claim 1. Dependent claim 11 recites that some of the comb teeth of the first sweeper (elements 66a, 66b/Figs. 6-8) comprise a support member (element 66c/Figs. 6 and 8) that reduces an operation resistance by the first sweeper (elements 66a, 66b/Figs. 6-8) (page 11/lines 9-13 of the specification).

Dependent Claim 12

Dependent claim 12 depends from independent claim 1. Dependent claim 12 recites at least one sweeper (elements 66a, 66b, 68a, 68b/Figs. 6-8) provided at the inlet (elements 66h, 68h/Figs. 4 and 7; 166h/Fig. 5) of the at least one hair tunnel (elements 66, 68/Figs. 4 and 7; 166/Fig. 5), wherein the at least one sweeper (elements 66a, 66b, 68a, 68b/Figs. 6-8) extends downward from the bottom surface of the outer casing (element 62/Figs. 2-7) at a peripheral edge portion of the inlet (elements 66h, 68h/Figs. 4 and 7; 166h/Fig. 5) of the at least one hair tunnel (elements 66, 68/Figs. 4 and 7; 166/Fig. 5) (page 9/line 20 – page 10/line 12 of the specification).

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

1. Whether claims 1-4, 6 and 8-12 are obvious under 35 U.S.C. §103(a) over U.S. Patent No. 4,817,233 to Waldhauser (hereinafter "Waldhauser") in view of U.S. Patent No. 4,426,751 to Nordeen (hereinafter "Nordeen"); and

2. Whether claim 7 is obvious under 35 U.S.C. §103(a) over Waldhauser and Nordeen in view of Fernandez-Grandizo Martinez, U.S. Patent Publication No. 2003/0145425 (hereinafter "Martinez").

In the section below entitled "arguments," Applicants set forth separate arguments for independent claim 1, as well as dependent claims 2-4 and 6-12. Applicants respectfully submit that each of claims 1-4 and 6-12 stands and falls separately from one another.

ARGUMENT

The present application includes 1 independent claim, namely, independent claim 1. This independent claim, as well as dependent claims 2-4 and 6-12, recite different features as may be evidenced by the discussion below. However, for ease of discussion, in some instances, similar features may be discussed with respect to one another. This is not an admission that the claims are the same, or that they stand or fall together. Rather, this is an attempt to narrow the number

of issues and limit the number of arguments. While arguments may be similar for different claims, it should be understood that differently claimed features are expressly recited in different claims.

I. Waldhauser and Nordeen

The Office Action rejected claims 1-4, 6, and 8-12 under 35 U.S.C. §103(a) over U.S. Patent No. 4,817,233 to Waldhauser (hereinafter "Waldhauser"), in view of U.S. Patent No. 4,426,751 to Nordeen (hereinafter "Nordeen"). The rejection is respectfully traversed.

A. Independent Claim 1

Independent claim 1 is directed to a vacuum cleaner, comprising a suction head installed at a front end of a suction path, wherein a vacuum pressure generated by a suction motor draws substances in through a suction hole formed in a bottom surface of an outer casing of the suction head and into the suction path, a brush rotatably installed in the suction hole of the suction head, and configured to rotatably contact a surface to be cleaned and at least one hair tunnel formed in the suction head, wherein an inlet into the at least one hair tunnel and an inlet into the suction hole are spaced apart from each other on the bottom surface of the outer casing with a corresponding portion of the bottom surface of the outer casing positioned therebetween such that the brush installed in the suction hole does not interfere with the at least one hair tunnel, wherein the at least one hair tunnel draws thin and long substances from the surface.

Waldhauser discloses a floor scrubber including a scrub head 16 having a brush housing 20 with a brush 22 rotatably installed therein. Tubes 26 spray cleaning fluid onto the brush 22

for wet cleaning of the floor as the brush 22 rotates. As the scrub head 16 is moved forward and rearward (arrows 50 and 52 in Figures 3 and 4 of Waldhauser, respectively), front and rear squeegees 34 and 40 squeegee fluid off the floor and into a plenum chamber 46. The fluid collected in the plenum chamber 46 flows through a stub tube 48 and into the body 10. The front and rear squeegees 34/40 include outer lips 36/42 and inner lips 38/44 each made of a flexible material. During forward motion, the front squeegee 34 is closed and the rear squeegee 40 is open (see Figure 3 of Waldhauser). During rearward motion the front squeegee 34 is open and the rear squeegee 40 is closed (see Figure 4 of Waldhauser).

In Waldhauser's floor scrubber, suction force is conveyed only through the openings defined by the front and rear squeegees 34/40. Suction force is not conveyed through the housing 20 of the scrub head 16 in which the brush 22 is installed. Rather, Waldhauser specifically discloses that cleaning fluid is directed into the housing 20 by the tubes 26 and onto the brush 22 so that the brush 22 can use the cleaning fluid to clean the floor as it rotates. Thus, the brush 22 is necessarily isolated from any type of suction path which would draw this fluid away from the floor before the brush 22 was able to use the fluid to actually clean the floor. A suction flow through the brush 22/brush housing 20 would destroy the originally intended utility and functionality of Waldhauser's floor scrubber.

Waldhauser neither discloses nor suggests a suction head installed at a front end of a suction path, wherein a vacuum pressure generated by a suction motor draws substances in through a suction hole (in which a brush is rotatably installed) formed in a bottom surface of an

outer casing of the suction head and into the suction path, as recited in independent claim 1.

Further, essentially the entire bottom of Waldhauser's scrub head 16 is open, both at the fully open bottom face of the housing 20 in which the brush 22 is installed, and at the open bottom ends defined by the front and rear squeegees 34 and 40. In an interview conducted on July 8, 2010, the Examiner asserted that the housing 20 has an inverted U shape, and that the bottom tip of the housing 20 (essentially, the end portion of the wall of the housing 20 that extends horizontally between the inner and outer side walls of the housing 20) constitutes the bottom surface of the housing 20/scrub head 16. Applicants respectfully disagree, and respectfully submit that this is an unreasonably broad interpretation of Waldhauser, and made only in light of the disclosure of the present application.

In particular, Applicants maintain the position that the scrub head 16/housing 20 has no discernable bottom surface, and thus there is no bottom surface which separates an inlet into the space in which the brush 22 is positioned (i.e., the suction hole), and an inlet into either of the squeegees 34 and 40 (compared in the Office Action to the claimed at least one hair tunnel). Thus, Waldhauser neither discloses nor suggests at least one hair tunnel formed in the suction head, wherein an inlet into the at least one hair tunnel and an inlet into the suction hole are spaced apart from each other on the bottom surface of the outer casing with a corresponding portion of the bottom surface of the outer casing positioned therebetween, as recited in independent claim 1.

The Office Action combines Waldhauser with Nordeen, asserting that Nordeen teaches

the claimed suction hole, and that it would have been obvious to incorporate such a suction hole into Waldhauser's floor scrubber based on the teachings of Nordeen. In particular, during the July 8, 2010 interview, the Examiner asserted that it would have been obvious, based on the teachings of Nordeen, to simply cut a hole in Waldhauser's housing, at a portion thereof corresponding to the stub tube 48, so that a suction force could also be exerted through the housing 20/brush 22. Applicants respectfully disagree.

More specifically, as set forth above, the space in which Waldhauser's brush 22 is installed in the housing 20 is necessarily isolated from any type of suction path which would draw any of the fluid away from the floor, as the cleaning effectiveness of Waldhauser's floor scrubber relies on the cleaning fluid reaching the floor and being agitated by rotation of the brush 22. Incorporation of a suction hole into this portion of Waldhauser's scrub head 16 by simply cutting a hole in an upper portion of the brush housing 20 would necessarily destroy the originally intended utility and functionality of Waldhauser's floor scrubber. Rather, it is respectfully submitted that Waldhauser specifically teaches away from such a modification. Thus, it is respectfully submitted that it would not have been obvious to modify Waldhauser's scrub head 16 in the manner suggested in the Office Action.

However, even if Waldhauser is improperly modified, as suggested in the Office Action and during the interview, Nordeen still fails to overcome the deficiencies of Waldhauser.

Nordeen discloses a suction nozzle 10 having a top wall 19 and a bottom wall 19b. A single, large opening is formed in the bottom wall 19b to accommodate a pair of brushes 16 and

17 and a pair of entrances 30 and 31 into transfer passages 25 and 29. Materials picked up by the rotating brushes 16 and 17 are swept substantially directly into the respective transfer passage entrances 30 and 31 by the brushes 16 and 17. Nordeen suffers deficiencies similar to those set forth above with respect to Waldhauser. That is, as with Waldhauser, substantially the entire bottom surface of Nordeen's nozzle 10 is open, with the entrances 30 and 31 into the passages 25 and 29 and the space in which the brushes 16 and 17 are installed sharing a single, large opening. Like Waldhauser, Nordeen neither discloses nor suggest that an inlet into the at least one hair tunnel and an inlet into the suction hole are spaced apart from each other on the bottom surface of the outer casing with a corresponding portion of the bottom surface of the outer casing positioned therebetween such that the brush installed in the suction hole does not interfere with the at least one hair tunnel, as recited in independent claim 1. For at least these reasons, it is respectfully submitted that Nordeen fails to overcome the deficiencies of Waldhauser.

For all of these reasons, it is respectfully submitted that independent claim 1 is allowable over Waldhauser and Nordeen, and thus the rejection of independent claim 1 under 35 U.S.C. §103(a) over Waldhauser and Nordeen should be reversed.

B. Dependent Claims 2-4, 6 and 8-12

Dependent claim 2 depends from independent claim 1, and therefore is allowable at least for this reason. However, dependent claim 2 recites additional features such that dependent

claim 2 does not stand or fall together with independent claim 1. For example, dependent claim 2 recites that the at least one hair tunnel is linked to the front end of the suction path by a first path that is isolated from a second path that links the suction hole to the front end of the suction path. As set forth above, Waldhauser and Nordeen, either alone or in combination, neither disclose nor suggest the claimed suction hole, and thus necessarily neither disclose nor suggest a second path linking such a suction hole to a front end of a suction path, as recited in claim 2. Thus, Waldhauser and Nordeen, either alone or in combination, neither disclose nor suggest the features of claim 2, either alone or in combination with claim 1, and therefore claim 2 is allowable for this additional reason. Accordingly, the rejection of claim 2 should be reversed.

Dependent claim 3 depends from dependent claim 2, which depends from independent claim 1, and therefore is allowable at least for this reason. However, dependent claim 3 recites additional features such that dependent claim 3 does not stand or fall together with dependent claim 2 and/or independent claim 1. For example, dependent claim 3 recites that the inlet of the at least one hair tunnel surrounds the suction hole, with the corresponding portion of the outer casing of the suction head positioned therebetween. As set forth above, Waldhauser and Nordeen, either alone or in combination, neither disclose nor suggest the claimed suction hole, and thus necessarily neither disclose nor suggest at least one hair tunnel surrounding such a suction hole, as recited in claim 3. However, even if Waldhauser's floor scrubber is improperly modified based on the teachings of Nordeen, as suggested in the Office Action, in Waldhauser's floor scrubber, the front and rear squeegees 34/40 are positioned to the front and rear of the

housing 20 in which the brush 22 is installed. The outer casing 16 of the suction head is positioned outside of the squeegees 34/40. No portion of the casing 16 is positioned between the open face of the housing 20 and either of the inlets into the squeegees 34/40. Likewise, no portion of the outer casing of Nordeen's nozzle 10 (with a casing defined by a top and bottom wall 19 and 19b) is positioned between the opening into the area in which the brushes 16, 17 are installed and the entrances 30, 31 into the passages 25, 29. Thus, claim 3 is allowable for this additional reason. Accordingly, the rejection of claim 3 should be reversed.

Dependent claim 4 depends from dependent claim 2, which depends from independent claim 1, and therefore is allowable at least for this reason. However, dependent claim 4 recites additional features such that dependent claim 4 does not stand or fall together with dependent claim 2 and/or independent claim 1. For example, dependent claim 4 recites that the inlet of the at least one hair tunnel is positioned at one of a front portion or a rear portion of the suction hole in a direction corresponding to a movement direction of the suction head. As set forth above, Waldhauser and Nordeen, either alone or in combination, neither disclose nor suggest the claimed suction hole, and thus necessarily neither disclose nor suggest that the inlet of the at least one hair tunnel is positioned at one of a front portion or a rear portion of such a suction hole, as recited in claim 4. Thus, Waldhauser and Nordeen, either alone or in combination, neither disclose nor suggest the features of claim 4 in combination with claim 2 and/or claim 1, and therefore claim 4 is allowable for this additional reason. Accordingly, the rejection of claim 4 should be reversed.

Dependent claim 6 depends from dependent claim 12, which depends from independent claim 1, and therefore is allowable at least for this reason. However, dependent claim 6 recites additional features such that dependent claim 6 does not stand or fall together with dependent claim 12 and/or independent claim 1. For example, dependent claim 6 recites that at least one sweeper comprises a first sweeper that protrudes downward from the bottom surface of the outer casing along a first peripheral edge of the inlet of the at least one hair tunnel, and a second sweeper that protrudes downward from the bottom surface of the outer casing along a second peripheral edge of the inlet of the at least one hair tunnel opposite the first peripheral edge, wherein the second peripheral edge is closer to the suction hole than the first peripheral edge is. As set forth above, Waldhauser and Nordeen, either alone or in combination, neither disclose nor suggest the claimed suction hole, and thus necessarily neither disclose nor suggest that a second peripheral edge (of at least one hair tunnel) is closer to such a suction hole than the a peripheral edge, as recited in claim 4. Thus, Waldhauser and Nordeen, either alone or in combination, neither disclose nor suggest the features of claim 6 in combination with claim 12 and/or claim 1, and therefore claim 6 is allowable for this additional reason. Accordingly, the rejection of claim 6 should be reversed.

Dependent claim 8 depends from dependent claim 6, which depends from dependent claim 12, which depends from independent claim 1, and therefore is allowable at least for this reason. However, dependent claim 8 recites additional features such that dependent claim 8 does not stand or fall together with dependent claim 6 and/or dependent claim 12 and/or

independent claim 1. For example, dependent claim 8 recites that the first and second sweepers are formed in a comb-tooth shape. As set forth above, Waldhauser and Nordeen, either alone or in combination, neither disclose nor suggest the features of claim 8 in combination with claim 6 and/or claim 12 and/or claim 1, and thus claim 8 is allowable for this additional reason. Accordingly, the rejection of 8 2 should be reversed.

Dependent claim 9 depends from dependent claim 8, which depends from dependent claim 6, which depends from dependent claim 12, which depends from independent claim 1, and therefore is allowable at least for this reason. However, dependent claim 9 recites additional features such that dependent claim 9 does not stand or fall together with dependent claim 8 and/or dependent claim 6 and/or dependent claim 12 and/or independent claim 1. For example, dependent claim 9 recites that an interval between adjacent comb teeth of the second sweeper is less than an interval between adjacent comb teeth of the first sweeper. As set forth above, Waldhauser and Nordeen, either alone or in combination, neither disclose nor suggest the features of claim 9 in combination with claim 8 and/or claim 6 and/or claim 12 and/or claim 1, and thus claim 9 is allowable for this additional reason. Accordingly, the rejection of claim 9 should be reversed.

Dependent claim 10 depends from dependent claim 9, which depends from dependent claim 8, which depends from dependent claim 6, which depends from dependent claim 12, which depends from independent claim 1, and therefore is allowable at least for this reason. However, dependent claim 10 recites additional features such that dependent claim 10 does not

stand or fall together with dependent claim 9 and/or dependent claim 8 and/or dependent claim 6 and/or dependent claim 12 and/or independent claim 1. For example, dependent claim 10 recites that the comb teeth of the first sweeper are longer than comb teeth of the second sweeper. As set forth above, Waldhauser and Nordeen, either alone or in combination, neither disclose nor suggest the features of claim 10 in combination with claim 9 and/or claim 8 and/or claim 6 and/or claim 12 and/or claim 1, and thus claim 10 is allowable for this additional reason. Accordingly, the rejection of claim 10 should be reversed.

Dependent claim 11 depends from dependent claim 10, which depends from dependent claim 9, which depends from dependent claim 8, which depends from dependent claim 6, which depends from dependent claim 12, which depends from independent claim 1, and therefore is allowable at least for this reason. However, dependent claim 11 recites additional features such that dependent claim 11 does not stand or fall together with dependent claim 10 and/or dependent claim 9 and/or dependent claim 8 and/or dependent claim 6 and/or dependent claim 12 and/or independent claim 1. For example, dependent claim 11 recites that some of the comb teeth of the first sweeper comprise a support member that reduces an operation resistance by the first sweeper. As set forth above, Waldhauser and Nordeen, either alone or in combination, neither disclose nor suggest the features of claim 11 in combination with claim 10 and/or claim 9 and/or claim 8 and/or claim 6 and/or claim 12 and/or claim 1, and thus claim 11 is allowable for this additional reason. Accordingly, the rejection of claim 11 should be reversed.

Dependent claim 12 depends from independent claim 1, and therefore is allowable at least for this reason. However, dependent claim 12 recites additional features such that dependent claim 12 does not stand or fall together with independent claim 1. For example, dependent claim 12 recites at least one sweeper provided at the inlet of the at least one hair tunnel, wherein the at least one sweeper extends downward from the bottom surface of the outer casing at a peripheral edge portion of the inlet of the at least one hair tunnel. As set forth above, Waldhauser and Nordeen, either alone or in combination, neither disclose nor suggest the features of claim 12 in combination with claim 1, and thus claim 12 is allowable for this additional reason. Accordingly, the rejection of claim 12 should be reversed.

II. Nordeen, Waldhauser and Martinez

The Office Action rejected claim 7 under 35 U.S.C. §103(a) over Waldhauser and Nordeen in view of Fernandez-Grandizo Martinez, U.S. Patent Publication No. 2003/0145425 (hereinafter “Martinez”). The rejection is respectfully traversed.

Dependent claim 7 depends from dependent claim 6, which depends from dependent claim 12, which depends from independent claim 1, and therefore is allowable at least for this reason. However, dependent claim 7 recites additional features such that dependent claim 7 does not stand or fall together with dependent claim 6 and/or dependent claim 12 and/or independent claim 1. For example, dependent claim 7 recites that the second sweeper is formed in a group bristle shape with a predetermined width.

As set forth above and as acknowledged in the Office Action, Waldhauser and Nordeen, either alone or in combination, neither disclose nor suggest the features of claim 7 in combination with claim 6 and/or claim 12 and/or claim 1, and thus claim 7 is allowable for at least this reason. Further, Martinez is merely cited as allegedly teaching a group bristle shape having a predetermined width, and for at least this reason fails to overcome the deficiencies of Waldhauser and Nordeen, either alone or in combination.

Accordingly, it is respectfully submitted that claim 7 is allowable over Waldhauser, Nordeen and Martinez, and thus the rejection of claim 7 should be reversed.

CLAIMS APPENDIX

The attached Claims Appendix contains a copy of the claims involved in the appeal.

EVIDENCE APPENDIX

No further evidence is provided with this appeal and therefore an Evidence Appendix is not provided.

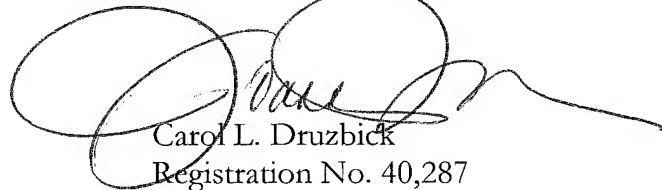
RELATED PROCEEDINGS APPENDIX

No related proceedings or decisions are associated with this appeal and therefore a Related Proceedings Appendix is not provided.

CONCLUSION

It is respectfully submitted that the above arguments show that each of claims **1-4 and 6-12** are patentable over the applied references. Based at least on these reasons, it is respectfully submitted that each of claims **1-4 and 6-12** defines patentable subject matter. Applicants respectfully request that the rejections of claims **1-4 and 6-12** set forth in the **April 9, 2010** Office Action be reversed.

Respectfully submitted,
KED & ASSOCIATES, LLP

A handwritten signature in black ink, appearing to read 'Carol L. Druzbeck', is written over the printed name and registration number.

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CLAIMS APPENDIX

1. A vacuum cleaner, comprising:

a suction head installed at a front end of a suction path, wherein a vacuum pressure generated by a suction motor draws substances in through a suction hole formed in a bottom surface of an outer casing of the suction head and into the suction path;

a brush rotatably installed in the suction hole of the suction head, and configured to rotatably contact a surface to be cleaned; and

at least one hair tunnel formed in the suction head, wherein an inlet into the at least one hair tunnel and an inlet into the suction hole are spaced apart from each other on the bottom surface of the outer casing with a corresponding portion of the bottom surface of the outer casing positioned therebetween such that the brush installed in the suction hole does not interfere with the at least one hair tunnel, wherein the at least one hair tunnel draws thin and long substances from the surface.

2. The vacuum cleaner of claim 1, wherein the at least one hair tunnel is linked to the front end of the suction path by a first path that is isolated from a second path that links the suction hole to the front end of the suction path.

3. The vacuum cleaner of claim 2, wherein the inlet of the at least one hair tunnel surrounds the suction hole, with the corresponding portion of the outer casing of the suction

head positioned therebetween.

4. The vacuum cleaner of claim 2, wherein the inlet of the at least one hair tunnel is positioned at one of a front portion or a rear portion of the suction hole in a direction corresponding to a movement direction of the suction head.

6. The vacuum cleaner of claim 12, wherein the at least one sweeper comprises a first sweeper that protrudes downward from the bottom surface of the outer casing along a first peripheral edge of the inlet of the at least one hair tunnel, and a second sweeper that protrudes downward from the bottom surface of the outer casing along a second peripheral edge of the inlet of the at least one hair tunnel opposite the first peripheral edge, wherein the second peripheral edge is closer to the suction hole than the first peripheral edge is.

7. The vacuum cleaner of claim 6, wherein the second sweeper is formed in a group bristle shape with a predetermined width.

8. The vacuum cleaner of claim 6, wherein the first and second sweepers are formed in a comb-tooth shape.

9. The vacuum cleaner of claim 8, wherein an interval between adjacent comb teeth

of the second sweeper is less than an interval between adjacent comb teeth of the first sweeper.

10. The vacuum cleaner of claim 9, wherein comb teeth of the first sweeper are longer than comb teeth of the second sweeper.

11. The vacuum cleaner of claim 10, wherein some of the comb teeth of the first sweeper comprise a support member that reduces an operation resistance by the first sweeper.

12. The vacuum cleaner of claim 1, further comprising at least one sweeper provided at the inlet of the at least one hair tunnel, wherein the at least one sweeper extends downward from the bottom surface of the outer casing at a peripheral edge portion of the inlet of the at least one hair tunnel.